Amendments to the Claims:

Claims 34-35, 37-49, 51-62, and 64-66 are currently pending. Claims 34, 47, 49, 51, 54, and 61 have been amended. No new matter is presented for examination. Claims 1-11, 18-26, 30-32, 36, 50, and 63 have been canceled. Claims 12-17, 27-29, and 33 have been withdrawn. This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-11. (Canceled)

12. (Withdrawn): An apparatus according to claim 1, wherein the optical element comprises a plurality of lenses to achieve the sine magnification correction and a combined near zero optical power, and no aspheric surfaces.

13. (Withdrawn): An apparatus according to claim 12, wherein the plurality of lenses includes a negative lens disposed in juxtaposition to a positive lens.

14. (Withdrawn): An apparatus according to claim 13, wherein the negative lens and the positive lens each has a planar surface.

15. (Withdrawn): A method of reducing sine magnification error in a multiple aperture optical system comprising the steps of:

tracing a plurality of chief rays from a plurality of different field points;

computing a fractional sine magnification error for each traced chief ray; and

varying the surface shape parameters, and a position of a corrector element relative to an intermediate image of the optical system to globally minimize the squares of the computed fractional sine errors.

16. (Withdrawn): A method according to claim 15, wherein the varying step includes varying a corrective surface of the corrector element according to the polynomial

$$z=\frac{cy^2}{1+\sqrt{1-(k+1)c^2y^2}}+Dy^4+Ey^6+Fy^8+Gy^{10}$$

where z is the departure from a plane, and y is the radial coordinate on the surface, D, E, F, G, C and K are parameters which are varied during the design process to minimize the sine magnification error, and represent aspheric coefficients, c is a vertex curvature and k is a conic constant.

17. (Withdrawn): A method according to claim 15, wherein the varying step includes maintaining a maximum allowable phase error "p" for a distributed aperture system of baseline L so that the fractional sine magnification errors *sk* satisfy the equation $sk \le \frac{p}{L\sin(a_{ik})}$ for every point in the field of view.

18-26. (Canceled)

27. (Withdrawn): A multiple aperture optical system according to claim 18, wherein each of the plurality of optical elements comprises a plurality of lenses having a combined near zero optical power, and no aspheric surfaces.

28. (Withdrawn): A multiple aperture optical system according to claim 27, wherein the plurality of lenses includes a negative lens disposed in juxtaposition to a positive lens.

29. (Withdrawn): A multiple aperture optical system according to claim 28, wherein at least one of the negative and positive lenses includes a planar surface.

30-32. (Canceled)

33. (Withdrawn): A method according to claim 32, wherein the placing step comprises placing a plurality of lenses at or near an intermediate image formed by the optical system, wherein the lenses have a combined near zero optical power, and no aspheric surface.

34. (Currently Amended): A distributed-aperture telescope having a distributed aperture, the distributed-aperture telescope comprising:

a plurality of three mirror anastigmats (TMAs) positioned within the distributed aperture, wherein each TMA includes:

a primary mirror device, the primary mirror device being configured to receive electromagnetic radiation from one or more sources;

a secondary mirror device coupled to the primary mirror device, the secondary mirror device being configured to redirect a portion of the electromagnetic radiation reflected from the primary mirror device;

a tertiary mirror device coupled to the secondary mirror device, the tertiary mirror device being configured to redirect a portion of the electromagnetic radiation from reflected the secondary mirror device;

an intermediate image plane disposed between the secondary mirror device and the tertiary mirror device; and

a phase plate disposed within a vicinity of the intermediate image plane, wherein the phase plate is configured to adjust a phase relationship <u>associated with a sine magnification error</u> of the portion of the electromagnetic radiation associated with a resulting image.

35. (Previously presented): The distributed-aperture telescope of claim 34, wherein each phase plate is a phase-error corrector.

36. (Canceled).

37. (Previously presented): The distributed-aperture telescope of claim 34, wherein the phase plates are configured to reduce distortion of the resulting images.

38. (Previously presented): The distributed-aperture telescope of claim 34, wherein each phase plate is a refractive element or a diffractive element.

39. (Previously presented): The distributed-aperture telescope of claim 34, wherein each phase plate has substantially no optical power.

40. (Previously presented): The distributed-aperture telescope of claim 34, wherein the primary mirror device is disposed between the second mirror device and the tertiary mirror device.

41. (Previously presented): The distributed-aperture telescope of claim 34, wherein:

each TMA further includes a fold flat mirror having a central aperture formed therein, and

the phase plates are disposed within the central apertures formed in the fold flat mirrors.

42. (Previously presented): The distributed-aperture telescope of claim 34, wherein:

each primary mirror device has a central aperture formed therein; and

a portion of the electromagnetic radiation reflected from the secondary mirror devices passes through the central apertures formed in the primary mirror devices.

43. (Previously presented): The distributed-aperture telescope of claim 34, wherein the intermediate image planes are disposed between the primary mirror devices and the tertiary mirror devices.

44. (Previously presented): The distributed-aperture telescope of claim 34, wherein each phase plate includes a refractive element that has a flat surface and a corrector surface.

45. (Previously presented): The distributed-aperture telescope of claim 44, wherein each corrector surface is defined by a rotationally symmetric polynomial.

46. (Previously presented): The distributed-aperture telescope of claim 45, wherein the rotationally symmetric polynomial is of the general form

$$z=\frac{cy^2}{1+\sqrt{1-(k+1)c^2y^2}}+Dy^4+Ey^6+Fy^8+Gy^{10}$$

where z is height, y is a radial coordinate, D, E, F, G, C and K are aspheric coefficients that are varied during a design process to effectively minimize the sine magnification errors, c is a vertex curvature, and k is a conic constant.

47. (Currently Amended) The distributed-aperture telescope of claim 34, wherein each phase plate is positioned at about 50 millimeters or closer to ~~approximately at or within about 50 millimeters of~~ a corresponding intermediate image plane.

48. (Previously presented): The distributed-aperture telescope of claim 34, wherein the distributed aperture is about 44.6 meters.

49. (Currently Amended): A distributed aperture optical system comprising:

a plurality of collector telescopes, each having an image plane at which images are formed; and

a plurality of phase plates corresponding to the plurality of collector telescopes, each phase plate is disposed approximately at or near the image plane of a corresponding collector telescope and has a surface adapted to adjust phase relationships of the images, wherein the phase relationships include sine magnification errors.

50. (Canceled).

51. (Currently Amended): The distributed aperture optical system according to claim ~~46~~ 49, wherein each phase plates is a phase error corrector configured to correct sine magnification errors.

52. (Previously presented): The distributed aperture optical system according to claim 49, wherein the images are intermediate images.

53. (Previously presented): The distributed aperture optical system according to claim 49, wherein the image planes are intermediate image planes.

54. (Currently Amended): The distributed aperture optical system according to claim 49, wherein each phase plate is positioned at about 50 millimeters or closer to ~~approximately at or within about 50 millimeters of~~ a corresponding intermediate image plane.

55. (Previously presented): The distributed aperture optical system according to claim 49, wherein each phase plate is a refractive element or a diffractive element.

56. (Previously presented): The distributed aperture optical system according to claim 49, wherein each phase plate has substantially no optical power.

57. (Previously presented): The distributed aperture optical system according to claim 49, wherein each collector telescope further includes:

a primary reflector having a central aperture formed therein,

a secondary reflector optically coupled to the primary reflector,

a tertiary reflector having a central aperture formed therein and optically coupled to the secondary reflector, and

a fold flat mirror having a central aperture formed therein and optically coupled to the tertiary reflector, wherein the flat fold mirror is disposed in an optical path near the central aperture formed in the primary reflector, and wherein the tertiary reflector is configured to reflect light passing through the central aperture formed in the fold flat mirror to the fold flat mirror, and wherein the phase plates are disposed within the central apertures formed in the fold flat mirrors.

58. (Previously presented): The distributed aperture optical system according to claim 49, wherein each phase plate is a refractive element having a flat surface and a corrector surface configured to correct for sine magnification errors associated with the phase relationships of the images.

59. (Previously presented): The distributed aperture optical system according to claim 58, wherein the corrector surface is defined by a rotationally symmetric polynomial.

60. (Previously presented): The distributed aperture optical system according to claim 59, wherein the polynomial is of the general form

$$z = \frac{cy^2}{1+\sqrt{1-(k+1)c^2y^2}} + Dy^4 + Ey^6 + Fy^8 + Gy^{10}$$

where z is height, y is a radial coordinate, D, E, F, G, C and K are aspheric coefficients that are varied during a design process to effectively minimize the sine magnification errors, c is a vertex curvature, and k is a conic constant.

61. (Currently Amended): A method of adjusting a phase relationship in a distributed aperture optical system comprising:

receiving electromagnetic radiation from one or more sources at a first mirror device;

receiving a portion of the of the electromagnetic radiation reflected from the first mirror device at a second mirror device;

transmitting a portion of the electromagnetic radiation reflected from the second mirror device through a phase plate this is configured to approximately phase the electromagnetic radiation transmitted through the phase plate to reduce distortion in a resulting image, wherein the distortion is associated with a sine magnification error; and

receiving a portion of the electromagnetic radiation transmitted through the phase plate at a third mirror device.

62. (Previously presented): The method of claim 61, further comprising receiving a portion of the electromagnetic radiation reflected from the tertiary mirror at a fold flat mirror having an aperture formed therein.

63. (Canceled):

64. (Previously presented): The method of claim 61, further comprising phasing a portion of the electromagnetic radiation transmitted through the phase plate to approximately phase the electromagnetic radiation forming the resulting image.

65. (Previously presented): The method of claim 61, wherein the phase plate is a phase error corrector.

66. (Previously presented): The method of claim 61, wherein the phase plate is approximately non-optically powered.